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The Genesis of Relationism

Leibniz's Early Theory of Space and Newton's Scholium

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Il est mon rival, c'est tout dire.
Leibniz on Newton, to the Princess of Wales[1]

1. A Reassessment of Leibniz's Theory of Space, and a Hidden Source Thereof

Leibniz's relational theory of space is widely regarded as a high point of modern philosophy. The theory was famously expounded by Leibniz in a polemical exchange with Samuel Clarke, who supported Newton's account of absolute space. The Leibniz–Clarke correspondence, with its array of mathematical, physical, metaphysical, epistemological, and theological arguments, has since been a reference point for every discussion of the philosophy of space.

This famous controversy took place in the last year of Leibniz's life and was interrupted by his death in 1716. Leibniz's description of space as an order of relations arrived unexpectedly for the scrutiny of Clarke and Newton, who were surprised by many of Leibniz's claims. Present-day scholars have been able to shed light on Leibniz's theory by collecting unpublished documents from the previous decades, in which Leibniz expressed his ideas in plainer ways. These documents, however, have also misled many commentators into believing that Leibniz had always endorsed the relational theory of space that he defended against Clarke. The great majority of interpreters of Leibniz's

[1] O. Klopp (ed.), *Die Werke von Leibniz* (Hanover: Klindworth, 1864–84), vol. 11, 39.

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theory of space, indeed, have eschewed a developmental approach and concentrated on his later views without questioning the chronology. Among the few scholars who have engaged the topic, some point out that Leibniz was experimenting with a theory of absolute space when he was a student in the 1660s, but they claim that as soon as he found his voice in philosophy he switched to the relational theory.[2] Others note that even in the 1670s and 1680s Leibniz upheld some theses that he was later to retract—for instance, that space is a phenomenon—but they regard these views as an underdeveloped form of his mature theory.[3] On these readings, Leibniz's early metaphysics of space counts, by and large, as an inchoate movement towards the relational theory, or a soon-to-be-emended juvenile misstep. Accordingly, Leibniz's pre-relational theories of space have never been addressed in their own right, and so far no one has explored the reasons that brought Leibniz to abandon these views or the occasion on which such a transformation took place. The absence of such an inquiry has led to the emergence of a tacit consensus among scholars, according to which Leibniz elaborated his famous theory quite early and with little external inspiration, and held it unchanged until the end of his life, when it eventually clashed with Newton's theory of absolute space.

As I show in the present essay, a thorough analysis of Leibniz's texts suggests a rather different picture. In preparing this essay, I have charted Leibniz's changing notions of space by recording all occurrences of the term 'space' and cognate words ('place', 'situation', 'position', etc.) in those of Leibniz's writings that have been published and dated.[4] This database has permitted a fresh look at Leibniz's theory and opened the way for some unexpected findings. Leibniz did indeed endorse a substantivalist theory of space in the 1660s that had some points of contact, and some common sources, with Newton's views. Yet, when Leibniz abandoned this theory in 1672, he

[2] See, for instance, the important book by R. T. W. Arthur, *Leibniz on Time, Space and Relativity* [*Leibniz*] (Oxford: Oxford University Press, 2021), which details some features of Leibniz's early metaphysics of space but claims that the theory of space as a system of relations had already appeared in 1677 (e.g. at 13, 130, and 155).

[3] See, for instance, J. A. Cover and G. A. Hartz, 'Space and Time in the Leibnizian Metaphysic' ['Space'], *Noûs*, 22 (1988), 493–519, who describe the evolution of Leibniz's ideas on space as moving from an 'early period' (1676–88; they ignore Leibniz's views from the 1660s and early 1670s), to a 'transition' (1696–1709), to a final 'mature period' (1711–16) encompassing the Leibniz–Clarke correspondence. The proposed periodization does not stand the scrutiny of the subsequent publication and dating of Leibniz's writings in the Academy edition, but Cover and Hartz's essay rightly pointed out at least that Leibniz's pre-1688 views were incompatible with his post-1688 views on space.

[4] These also include the geometrical writings (1677–90) that will be published in volume VII, 9, which I am currently editing together with the scholars at the Leibniz-Archiv in Hanover.

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did not replace it with the idea that space is a system of relations but, rather, with a largely Scholastic theory of space as an imaginary entity. Leibniz's earliest commitment to a relational theory of space took place much later than is generally supposed—only in 1688. In this year, a marginal note in Leibniz's *Specimen inventorum* advanced for the first time the claim that space is a 'relation'. In the following years this thesis was further developed, and by 1692–5 Leibniz came to define space as an 'order of coexistence' and to endorse a fully fledged relational theory.

This means that a non-relational theory of space was endorsed by Leibniz well into his 'middle years', to use Daniel Garber's expression, and in particular at the same time as the development of his dynamics and his metaphysics of corporeal substances and possible worlds. The present essay may be seen, indeed, as an application to the notion of space of Garber's discontinuist methodological approach to Leibniz's writings. My results are, however, independent of Garber's thesis of a change in Leibniz's ontology of substance in the 1690s, and, in the absence of a complete edition of Leibniz's works from this period, I refrain from making any conjecture on the role played by the new theory of space in the origin of the metaphysics of monads.[5]

The correct dating of Leibniz's formulation of the relational theory of space, however, does not merely provide a reassessment of Leibniz's *Entwicklungsgeschichte*. There is much more at stake. We are finally able to understand the motives and the occasion that brought Leibniz to envisage such a theory.

Leibniz penned the *Specimen inventorum* while he was in Vienna, in the fall or early winter of 1688–9. In those decisive weeks Leibniz was enraptured by a book that he had finally managed to lay his hands on: he was reading and annotating Newton's *Principia*.

As it turns out, the two dominant theories of space of the modern age—relational and absolutist—are not independent of one another. Leibniz had wavered between different conceptions of space in the previous years, but

[5] The reference to Leibniz's 'middle years' is, of course, to D. Garber, 'Leibniz and the Foundations of Physics: The Middle Years', in K. Okruhlik and J. R. Brown (eds.), *The Natural Philosophy of Leibniz* (Dordrecht: Reidel, 1985), 27–130, and the more recent developmental approach to Leibniz's philosophy in D. Garber, *Leibniz: Body, Substance, Monad* [*Leibniz*] (Oxford: Oxford University Press, 2009). I take the middle period to encompass the years 1672–88 (a little earlier than Garber's own periodization), as in these years Leibniz endorsed a distinctive theory of space. Leibniz's theory of space in the middle period is compatible with an ontology of corporeal substances, but it was developed before the latter, just as the relational theory of space of 1688 predates the appearance of monads in Leibniz's philosophy.

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the reading of the *Principia* prompted him to work out his view on the topic once and for all and resulted in the elaboration of an original theory that he endorsed for the rest of his life and to which most of his posthumous fame is attached.

Leibniz originally devised his relational theory of space as a rejoinder to Newton.

This fact puts the Leibniz–Clarke correspondence in a wholly new light. It would be unreasonable to conclude that this exchange had been planned by Leibniz some twenty-five years before it happened; many other contingencies prepared the stage for the controversy and made it explode. But the documents at our disposal prove that Leibniz elaborated his theory of space by weighing up the strengths, weaknesses, and consequences of Newton's own theory and worked out his arguments with that target in mind. So, when the occasion arose, Leibniz seized it right away and sent his letter to the Princess of Wales complaining about the 'quite extraordinary philosophy of Mr. Newton', according to which 'space is the organ by which God perceives things'.[6] He was looking for a fight and managed to start a war.

Newton and Clarke did not know of this hidden influence, nor did later readers and interpreters of the correspondence, from Des Maizeaux to Kant, from Mach to Reichenbach. They all remained convinced that Newton's and Leibniz's theories of space had come about through independent routes, and that their almost incidental clash marked a parting of the ways in modern thought.[7] It is perfectly understandable, of course, that these readers of the Leibniz–Clarke correspondence were not aware of the full story behind the exchange, since they could not avail themselves of the evidence provided by Leibniz's unpublished notes. Yet it remains remarkable that present-day interpreters have not realized this important connection. This unfortunate situation seems to have been caused by the combination of a number of minor accidents and partial misunderstandings, which conspired to hinder comprehension.

The most important of these misunderstandings are conceptual. Interpreters have generally been guided by a teleological historiography that starts from the Leibniz–Clarke correspondence and projects Leibniz's later views back onto his earlier theories. Charmed by the correspondence and

[6] Leibniz to Caroline, 10 May 1715 (in A. Robinet [ed.], *Correspondance Leibniz–Clarke* [*Leibniz–Clarke*] [Paris: PUF, 1957], 17); and First Letter to Clarke, November 1715 (Robinet, *Leibniz–Clarke*, 23).

[7] The expression comes from E. Cassirer, 'Newton and Leibniz', *The Philosophical Review*, 52 (1943), 366–91, at 366.

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